

Drake Street Fire Safety Design Strategy

RIBA 2 Concept Design

Introduction

The concept design for fire safety against the project brief of a newly constructed three storey purpose built block of flats will be placed against the following:

- Regulation 3 (1) ((a)) 'The erection or extension of a building'
- Regulation 3 (1) ((c)) 'Meaning of building work': the material alteration of a building
- Regulation 4 'Requirements of building work': that it satisfies the expected standards when complete
- Regulation 7 'Materials and Workmanship': the building work shall be carried out with the correct materials and with the correct standard of workmanship as outlined within BS 8670-1: 2024 and PAS 8671/8672 & 8673:2022
- Regulation 38 'Fire safety information' provision of essential information when the building is complete

As sleeping accommodation, the apartment block at Drake Street will fall under the following fire safety legislation:

- The Housing Act 2004
- The Regulatory Reform (Fire Safety) Order 2005 incorporating the Fire Safety Act 2021
- The Fire Safety (England) Regulations 2022
- The Building Safety Act 2022

The design strategy will primarily base its findings upon the details of solutions or requirements within:

- The Building Regulations Approved Document B (Fire Safety): 2019 (as amended 2020/2022 & 2025) (England) Volume 1 Dwellings (ADB)
- Employers Requirements Version 18: 2023

Note: The design strategy may also place a fire engineered overlay above the scope of the Approved Document to support the Employers requirements of enhanced resilience together with the Secretary of States intentions in achieving the functional requirements of Building Regulations as permitted within ADB Paragraphs 0.12 and 0.13, by use of supporting references from:

- BS 7974: 2019 Application of fire safety engineering principles the design of buildings. Code of practice
- PD 7974-5: 2014 + A1: 2020 Application of fire safety engineering principles the design of buildings - fire and rescue service intervention
- PD 7974-6: 2019 Application of fire safety engineering principles the design of buildings - Human factors: occupant evacuation, behaviour and condition

- PD 7974-7: 2019 Application of fire safety engineering principles the design of buildings - Probabilistic risk assessment
- BS 7899-2: 1999 Code of practice for the assessment of hazard to life and health from fire - Guidance on methods for the quantification of hazards to life and health and estimation of time to incapacitation and death in fires
- CIBSE Guide E - 'Fire Safety Engineering': 2019

It may also reference guidance, where necessary from the following:

- BS9991: 2024 'Fire Safety in the Design, Management and use of Residential buildings - Code of Practice'
- Home Office 'A guide to making your small block of flats safe from fire': 2024 (FSO Article 50 guidance)
- BS 5839-1:2017 'Code of Practice for the Design, Installation, Commissioning and Maintenance of Fire Detection and Fire Alarm systems in premises'
- BS 5839-6:2019+A1:2020 'Code of Practice for the Design, Installation, Commissioning and Maintenance of Fire Detection and Fire Alarm systems in domestic premises'
- BS 5266-1:2016 'Code of Practice for Emergency Lighting in premises'
- BS 8214:2016 'Timber based Fire Door assemblies - Code of practice'

Level of design and resilience

There is a direct relationship between the level of design of fire precautions and the ongoing resilience of the building toward long-term redundancy (non-compliance) throughout its expected lifetime.

The greater the level or standard of fire precautions provided to a building, the more resilience that building has to maintaining the standard over its lifetime of use. This would include the following:

- Impact of legislative approach
- Societal and cultural demands
- The potential physical and cognitive changes to relevant persons
- Post incident return (service continuity)

Inclusion of the enhanced Employers Requirements, whilst primarily concerned with life safety, will also allow provide for ability of the building to return to a measure of service continuity

In this case against against :

- Susceptibility - avoiding fire related issues through the correct use of materials against standards to create passive prevention
- Vulnerability - reducing the extent and impact of any fire incident to the building by minimising effects through 'additional design' rather than 'valued engineering' to merely attain a standard
- Recoverability - improving the recovery of the building back to full capability by prevention and protection measures together with good management and liaison with the fire service and other facilities management

Intention and approach

The building shall be designed and constructed so that there are appropriate provisions for the early warning of fire, appropriate Means of Escape (MoE) to allow for suitable and safe evacuation of the building in a given timeframe to an external ultimate place of safety. This will also incorporate inherent fire safety resistance measures to identified areas to allow for the safe escape of residents together with any visitors/ guests.

The design of the apartment block will be undertaken against statutory guidance Approved Document B (2019). To support this, an overlay approach may use an accepted set of tenability limits for escaping occupants with stay put evacuation strategies against a calculated RSET/ASET arrangement to maintain expected fire growth within identified areas to the point of active fire service intervention. This will ensure that the Secretary of States intentions against the Building Regulations 2010 Schedule 1 are both met and retained.

As previously noted, reference may also be made to individual intentions outlined within BS9991: 2024 'Fire Safety in the design, management and use of residential buildings - Code of Practice'

This approach is not regarded as cherry picking, but simply using ADB as the baseline design and enhancing specific areas by complimenting it with alternative solutions.

Where:

B1 Means of warning and escape

The building shall be designed and constructed so that there are appropriate provisions for the early warning fire, and appropriate Means of Escape in case of fire from the building capable of being safely and effectively used at all material times.

In context of the above, the intention is to ensure:

- All occupants can escape to a place of relative safety without external assistance
- Escape routes are sufficiently protected from the effects of fire and smoke
- There are appropriate provisions to limit the ingress of smoke to the escape routes
- Escape routes are adequately lit
- There are appropriate provisions to support a 'stay put' evacuation strategy

B2 Internal fire spread (linings)

(1) To inhibit the spread of fire with the building, the internal linings shall-

- (a) adequately resist the spread of flame over their surfaces
- (b) if ignited, have either a heat release rate or rate of fire growth which is reasonable in the circumstances

In the context of the above, the intention is to ensure:

- The building internal fabric (including communal and circulation spaces) should make a limited contribution to the fire growth, including a low rate of heat release

B3 Internal fire spread (structure)

(3) Where reasonably necessary to inhibit the spread of fire within a building:

- (a) sub-division of the building with fire resisting construction
- (b) installation of suitable automatic fire suppression systems

(4) The building shall be designed and constructed so that the unseen spread of fire and smoke within concealed spaces is inhibited

In the context of the above, the intention is to ensure:

- For defined periods, compartmentation of the buildings by fire resisting elements
- The proposed automatic suppression system is appropriate for its specific engineered purpose
- The openings within any internal compartmentation elements are appropriately fire stopped
- The ability for fire to spread unseen into internal cavities is inhibited

B4 External fire spread

- (1) the external walls of the building shall adequately resist the spread of fire over the walls, having regard to the height uses and position
- (2) The roof of the building shall adequately resist the spread of fire over the roof, having regard to its use and position

In the context of the above, the intention is to ensure:

- The risk of ignition by an external source to the outside surface of the buildings is restricted
- The amount of thermal radiation from unprotected areas such as windows and other openings is not enough to start a fire in other areas or buildings
- Flame spread over the roof and/or by penetration is restricted

B5 Access and facilities for the fire service

- (1) The building shall be designed and constructed so as to provide reasonable facilities to assist fire fighters in the protection of life

In the context of the above, the intention is to ensure:

- Provision for internal fire facilities for Greater Manchester Fire and Rescue Service to complete their tasks
- A facility to store building information for Greater Manchester Fire and Rescue Service to complete their tasks

Regulation 7 (Approved Document 7)

Where the intention is to ensure:

Performance

- Materials are of a suitable nature and quality in relation to the purpose and condition of their use
- Workmanship is such that materials used are prepared and applied to adequately perform the functions for which they are intended



A Bolder

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